

# Presupposition, Congruence and Adverbs of Quantification

Mike Calcagno<sup>1</sup>

e-mail: calcagno@ling.ohio-state.edu

## 1 Preliminaries

This paper assumes, along with many others, including Barwise and Cooper (1981), Stump (1981, 1985), Chierchia (1988, 1990), Schwarzschild (1989), and de Swart (1993), that adverbs of quantification (the boldface elements in (1), also called Q-adverbs) are generalized quantifiers, and attempts to make explicit the process by which the domain of these quantifiers is computed.

- (1) a. Jan **often** butters her bread.
- b. Peter **usually** goes to the theater if he is town.
- c. Bobby **always** shaves when he showers.
- d. Marcia **sometimes** buys **TURKISH** coffee.

Now, the example in (1a) (probably) does not mean that on most occasions (morning, noon or night) we can expect to find Jan buttering her bread. Rather, its meaning can be roughly paraphrased by something like (2), where an explicit clause is taken to provide some restriction on the domain of quantification.

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- (2) When Jan has bread and is going to eat it, she often butters it.

Similarly, the quantifiers in (1b)-(1d) also involve domain restriction. In (1b), *usually* seems to range only over situations in which Peter is in town; (1c) has (at least) two readings, paraphrased in (3a) and (3b); and (1d), with intonational prominence indicated in all capital letters and thus on the word *Turkish*, can be taken to mean something like (3c).

- (3) a. When Bobby shaves, he is always showering.  
 b. When Bobby is in the shower, he always shaves.  
 c. When Marcia buys coffee, she sometimes buys Turkish coffee.

As von Stechow (1995) notes, "considerable machinery" has been proposed recently to derive the correct restriction in cases like those above. For example, Rooth (1985, 1991/5), Krifka (1992) and Partee (1991) propose that focused material is mapped into an explicit restrictive clause in a tripartite structure at the level of LF. Diesing (1990, 1992) and Johnston (1994) map VP-external material into a similar LF structure, while Berman (1990) and Chierchia (1992, 1993) also assume the existence of a tripartite representation at the level of syntax/semantics, to be filled by material presupposed by the nuclear scope and topics, respectively.

I will instead argue, along with von Stechow and in keeping with recent work by Roberts (1991), Rooth (1992) and Schwarzschild (1993), that the determination of these quantifiers' restrictions is **pragmatic**. More concretely, I will propose that a pragmatic theory of **information structure** like that proposed by Roberts (1995) leads naturally to a unified, presupposition-based account of domain restriction, in which operators of this type range freely over a set of situations "under discussion" at a given place in discourse. The account differs from that of von Stechow (1995) in that it does not appeal to any relation between a sententially-introduced anaphoric element and a set of "discourse topics." Rather, I provide an account based on the otherwise-motivated relations of **congruence** and **presupposition satisfaction** and show that an approach of this type can more adequately deal with a range of data that includes examples that have heretofore been problematic for the "anaphoric" accounts mentioned above.

## 2 Theoretical Background

### 2.1 A Structured Context

I am going to assume a theory of context along the lines of Roberts (1995), which in turn is an enrichment of the ideas of Stalnaker (1979) and Carlson (1983).<sup>2</sup> The key idea will be that discourse is organized around a series of conversational goals, and that the primary goal of discourse is communal inquiry. That is, participants in a discourse are attempting to share with each other information about the world, and they go about this undertaking by addressing implicit and explicit questions. The

<sup>2</sup>This brief introduction will, without doubt, do injustices to just about everyone involved in this line of research. Readers are strongly encouraged to dig up Roberts (1995) for a more complete introduction.

information that interlocutors share (or behave as if they believe to be true) can be modelled, as in Stalnaker (1979), as a set of propositions known as the **common ground**. Assuming Kratzer's (1989) version of situation semantics, in which situations are parts of possible worlds, we will take propositions to be sets of situations. The common ground, in turn, will be a set of sets of situations that the interlocutors take to hold. The intersection of the common ground, Stalnaker's **context set**, is also a useful notion. Intuitively, this set will be the set of situations where all the propositions in the common ground are true. That is, assuming that the interlocutors are rational and so forth, the context set is a set of candidate situations for reality. The goal of discourse can be stated in terms of the context set as follows: interlocutors try to reduce the context set to a singleton; that is, they try to find the possible world (which is just a large-enough situation) that captures the way things are.

The exchange of information itself is modelled by a set of **moves**, of which there are two types. Questions count as what Carlson would call *setup moves*; assertions can be thought of as *payoff moves*. As the terms suggest, these moves come in pairs: a question is asked (set-up) and an assertion answers (payoff). On the surface, it may seem absurd to claim that discourse proceeds in this way. That is, we can think of many dialogues in which an assertion is made out of the blue, or in which a series of questions is asked with no assertions in between. I would suggest, however, that in the former case, the assertion comes as answer to an implicit question, which can be inferred by various cues and is at the very least an answer to the "Big Question" (*What is the way things are?*). In the latter case, it is merely that the interlocutors are enumerating a plan to answer some larger question by a series of sub-questions, and that these sub-questions are answered one at a time in the order in which they are accepted. For example, suppose that Carol and Mike are cleaning up, in the aftermath of a wild party and wish to answer the question *Who drank what?*. They may attempt to answer this by addressing the sub-questions *What did Bobby drink?*, *What did Peter drink?*, *What did Greg drink?* and so forth. Note that answers to all the sub-questions would provide an answer to the large question, and note also that each of the sub-questions need not be explicitly asked (i.e., realized as a speech act). What is important is simply that both interlocutors can figure out that these are the questions being addressed, and that they are answered one at a time.<sup>3</sup>

So what exactly is a move? Well, we first note that moves are essentially semantic entities and that a given move can be interpreted in two dimensions. That is, with each move we will associate with it **presupposed content** and **preferred content**.<sup>4</sup> Preferred content is what is asserted in an assertion, and the non-presupposed content of questions. In terms of the goals we have alluded to before, question moves are a type of imperative which proffer a set of alternatives and dictate that the interlocutors choose among them. More specifically, the alternatives determined by a question can be taken to be the set of propositions which are the possible answers to the question. Another way of viewing these preferred alternatives, suggested by Groenendijk & Stokhof (1984), is this: a question partitions the context set into sets of worlds in which one complete answer to the question is true. For example, the question *Where did Robin go last Thursday?* will partition the context set into sets of worlds where, for example, Robin went to Greece last Thursday, Robin went to Turkey last Thursday,

<sup>3</sup>See Roberts (1995) and below for more discussion of these issues.

<sup>4</sup>The terms here, like those in much of this section, are Roberts'.

Robin went to Italy last Thursday and so forth. Assertions, in turn, simply denote propositions in the traditional sense and shrink the context set by selecting from the partitions proffered by the question to which the assertion is a complete answer. To continue our simple example, the assertion *Robin went to GREECE last Thursday* will pick out in the context set all and only those worlds in which it was Greece where Robin went last Thursday, as opposed to Italy or Turkey or some other place. The mechanism by which it does this is quite straightforward. If an assertion is accepted by the interlocutors in a discourse, it is simply added to the common ground, with the desired shrinking of the context set following by definition.

## 2.2 Presupposition, Questions and Congruence

Language is a cooperative undertaking and it is in the best interest of the interlocutors in a given discourse to be as explicit as possible about what they believe to be the propositions in the common ground and what they believe to be the current question being addressed, which from now on we will refer to as the **question under discussion**. On the other hand, if we had to enumerate explicitly everything we believed to be true about the world before, for example, asking whether or not there was milk in the refrigerator, we would expect language to be a quite cumbersome and inefficient means of gathering information. It is not.

Rather, it has been argued that a number of conventional "tricks" are available to participants in a given discourse that can be used to indicate to other participants what is believed to be, for example, the question under discussion or other information in the common ground. By using these tricks, we can keep the discourse coherent in crucial respects without having to waste a lot of time asking obvious questions or providing background information.

In light of the goals and structure of discourse sketched above, presupposition is certainly used for this purpose in the sense that it enables interlocutors to make sure they are considering sets of situations that are similar in crucial respects, i.e., with respect to the information in the common ground. That is, if we adopt a notion of presupposition akin to Stalnaker's (1979) or Heim's (1983, 1992), made explicit in (4), it follows that the set of candidate situations at any given point (which we have been calling the context set) will have to be a subset of the set of situations in any presupposition. If a situation is in the context set, however, it must belong to all the propositions in the common ground. Hence, any presupposition would also have to be in or be entailed by the propositions in the common ground.

- (4) An utterance  $\phi$  presupposes proposition  $p$  iff  $\phi$  is felicitous in any given context  $c$  only when  $c \models p$ .

Of course, interlocutors come into every exchange with different information about the world, so isn't it unreasonable to expect that every presupposition in a given discourse will be in the set of propositions that the participants all believe to be true? Well, yes, but in general this does not cause the discourse to grind to a halt. As Roberts (1995:10-11) puts it: "If an utterance has a conventionally expressed presupposition, it is often quite clear what the context should be like in order for it to be felicitous. And if the context isn't quite like that but the hearer is cooperative and has no objection to the truth of the presupposed information, he will accommodate it – behave as if the context included that information all along."

The notion of presupposition can also be used to explain why certain utterances are felicitous answers to certain questions while others are not. Consider, for example, the question in (5) and the answers in (6):

- (5) Where did Marcia go last year?
- (6) a. Marcia went to GREECE last year.  
 b. #MARCIA went to Greece last year.  
 c. #Marcia went to Greece last YEAR.  
 d. #Marcia went to Greece LAST year.

It is clear that, speaking just on an intuitive level at this point, that the utterance in (6a) felicitously answers (5) while the utterances in (6b)-(6d) seem to be infelicitous in this context, or to answer some other questions. It is also the case that (6a)-(6d) differ only in the placement of prosodic focus (indicated again by capital letters).

The facts above can be explained, it seems, if we assume (like Rooth (1985,1992), von Stechow (1989) and most recently Roberts (1995)) that assertions, like questions, are also associated with sets of alternatives, and that a relationship (congruence) is presupposed to hold between the alternative sets of felicitous question/answer pairs. The missing link, of course, will be that the prosodic focus of a given assertion serves to (partially) determine the set of alternatives associated with that assertion, and in this way to indirectly constrain the question which it can answer, as Jackendoff (1972) first suggested. We'll develop this proposal here along lines suggested by von Stechow (1989) and Roberts (1995).<sup>5</sup>

We begin by making explicit the process by which alternative sets are determined for assertions and questions. The case of assertions is quite simple if we assume (correctly, I think) that each assertion has at least one focused constituent.<sup>6</sup> That is, something like (7) will suffice.

- (7) The **focus alternative set** corresponding to a constituent  $\beta$ ,  $\|\beta\|$ , is the set of all interpretations obtained by replacing all (functionally - m.c.) focused constituents in  $\beta$  with variables, and then interpreting the result relative to each member of the set of all assignment functions which vary at most in the values they assign to those variables. (Roberts 1995:14)

So, for example, the set of alternatives associated with (6a) would be the result of replacing the constituent *Greece* with a variable of the appropriate sort (say, a variable over places) and ranging over all other variables in the domain of that sort. What we get is a set of propositions  $P$  such that:

<sup>5</sup>We'll assume, along with Roberts, that the alternatives associated with an assertion can be thought of as part of its presupposed content, as opposed the proffered alternatives posited in the previous section for questions. This allows us to maintain the position of the previous section that assertions simply proffer propositions.

<sup>6</sup>Importantly, we'll say that this constituent must **contain** a prosodically focused element, but need not be equal to a prosodically focused element. So, in the sentence *Greg always butters his BREAD*, for example, possible focused constituents would be *his bread*, *butters his bread*, *always butters his bread* or *Greg always butters his bread*. In order to distinguish prosodic focus from "functional" focus, we will mark the latter with brackets and a subscript F.

$$(8) P = \{ p \mid (\exists u \in D)[p = \text{Marcia went to } u \text{ last year}] \}$$

Computing the alternatives associated with questions is a bit more tricky. In the previous section, it was suggested that questions *profer* alternatives. This cannot be totally correct, if we are to maintain a coherent view of the nature of common ground. That is, the common ground is taken to be a set of propositions, and the alternative sets we've been entertaining thus far are also sets of propositions. This would suggest that questions are somehow incompatible with being added to the common ground, or that they are added to the common ground in a different way. This is undesirable for a number of reasons, one of which being that we would like to check the felicity of questions with respect to presupposition just as we check the felicity of assertions, and we cannot do this without the content of the question being added to the common ground. Fortunately, von Stechow (1989) provides a solution to this little puzzle by providing a semantics for questions in which they do, in fact, denote a particular type of proposition, which is related to the set of alternatives that we need for our definition of congruence. This set of alternatives can be computed separately, in accordance with (9), where  $|\beta|$  stands for the "regular" denotation of  $\beta$ :

(9) The **Q-alternatives** corresponding to an utterance  $\alpha$ ,  $QA(\alpha)$ , are

$$\{ p \mid (\exists u^{i-1}, \dots, u^{i-n} \in D)[p = |\beta|((u^{i-1}) \dots (u^{i-n}))] \}, \text{ where}$$

- a.  $\alpha$  has the logical form  $\text{wh}_{i-1}, \dots, \text{wh}_{i-n}(\beta)$ , with  $\{ \text{wh}_{i-1}, \dots, \text{wh}_{i-n} \}$  being the possibly empty set of wh-elements in  $\alpha$ , and
- b.  $D$  is the domain of the model for the language, suitably restricted by sort. (Roberts 1995:14)

The "regular" denotation of a question will be the proposition expressed in (10). Note that this proposition is closely related to the Q-alternatives above in that it just picks out those situations in which all the Q-alternatives are "asked." By this, we mean something like (as Roberts (p.c.) suggests) the truth of all the Q-alternatives is under consideration by the interlocutors, or is being evaluated by the interlocutors. In this way, questions do, in fact, *profer* alternatives, albeit in an indirect way. We will return to this discussion in §3.

(10) **Interpretation of  $?(\alpha)$ :**

$$|? \alpha| = \{ s \mid \forall p \in QA(\alpha), p \text{ is asked in } s \}.$$

Now, returning to our example, the set of Q-alternatives associated with (5), which we assume to have the logical form in (11) will be the set of propositions  $Q$  expressed in (12).

$$(11) ?[\text{where}(\lambda x. \text{Marcia went to } x \text{ last year})]$$

$$(12) Q = \{ p \mid (\exists u \in D)[p = \lambda x. \text{Marcia went to } x \text{ last year}](u) \} \\ = \{ p \mid (\exists u \in D)[p = \text{Marcia went to } u \text{ last year}] \}$$

Congruence, then, expressed formally in (13), is a relation between some utterance and a question that requires that the focal alternatives of the utterance be the same set as the Q-alternatives of the question.

(13) Move  $\beta$  is **congruent** to a question  $?_A$  iff  $\|\beta\| = QA(\alpha)$ .

It is easy to see that the Q-alternatives of (5), expressed in (12), are the same as those of (6a), which are expressed in (8). It should also be clear that the focal alternatives of (6b)-(6d) will be different than (12). These examples are thus ruled out as congruent to (5), and thus violate the presupposition that they be congruent to the question under discussion. That is, the infelicity of these utterances is predicted as a case of presupposition failure.

And, as in any case of presupposition failure, we would expect accommodation to play a role. That is, consider the case where a sentence like (6b) is uttered out of blue (i.e., with no explicit question under discussion). We can say that it is still the case that this utterance is presupposed to be congruent with a question under discussion, although we may not know what that question is, or we may not have been explicit about what that question is. We do know, however, that if the congruence presupposition is to be satisfied, the Q-alternatives associated with the question under discussion must be the same as the focal alternatives of (6b) (given in (14)).

(14)  $\{ p \mid (\exists u \in D)[p = u \text{ went to Greece last year}] \}$

That is, we know that the utterer of (6b) wishes to entertain a set of Q-alternatives that are the same as those in (14). If this is not objectionable to the other interlocutors in the discourse, they will be accommodated, which in the end has the effect of introducing into the common ground, some question whose denotation is given in (15). One such question would be *Who went to Greece last year?*

(15)  $\{ s \mid \forall p \in \{ p \mid (\exists u \in D)[p = u \text{ went to Greece last year}] \}. p \text{ is asked in } s \}$

### 3 The Domain of Q-Adverbs

With these technical details out of the way, I would like to turn now to the central issue of the paper: namely, the question of how the domain of adverbs of quantification is determined. As alluded to in the introduction, a number of proposals have surfaced in recent years, and most of these assume the existence of a tripartite structure one of whose elements is a restrictive clause. The material that gets mapped into this restrictive clause has been a topic of great debate. In this section, I will discuss what I take to be three major types of these proposals, and will argue both that they all have an element of truth to them, and that in the end they are all incomplete or inadequate in some way.

The view that should emerge, I will argue, is that it is impossible to correctly determine the domain of a Q-adverb without considering the question under discussion when the utterance containing the Q-adverb is introduced. In §4, I will argue that the observations in this section are compatible with a purely pragmatic theory of domain restriction, and that such a theory accounts for a wider range of facts in a more adequate and more elegant manner.

#### 3.1 Restrictive Clauses

In the classic GQ analysis of determiners, the restriction and nuclear scope of a given quantifier is given by an obligatory syntactic clause. That is, in (16), the clause

*woman in the room* denotes the set of entities in *every*'s restriction, while *has won a Nobel Prize* denotes the set corresponding to the nuclear scope. The quantifier simply expresses a relation between these two sets.

(16) Every woman in the room has won a Nobel Prize.

Unlike determiners, however, an adverb of quantification does not require an explicit restrictive clause, although it has been argued that such clauses are available on an optional basis. Temporal adverbial clauses headed by adverbs like *when*, *after* and *before*, as well as *if*-clauses and temporal PP-adjuncts, seem like good candidates for this role, as the examples in (17) illustrate.

(17) a. The heater is always on when people are in the house.

b. The river is always at flood stage after it rains.

c. The heater is always on if it is cold outside.

d. The river is always at flood stage on Sundays.

Certainly, an example like (17a) can mean that the set of cases in which people are present in the house is a subset of cases in which the heater is on.

The facts, however, are considerably more complex than these simple examples suggest. Consider, for example, the utterances in (18).

(18) a. Marcia always takes the bus home when it rains.

b. Marcia always takes the bus home after it rains.

c. Marcia always takes the bus home if it rains.

d. Marcia always takes the bus home on Sundays.

It is clear that the quantifier in, for example, (18a) does not range over cases in which it is raining, but rather cases in which it is raining AND Marcia is going home. That is, the *when*-clause in this example determines an aspect of the domain of quantification, but is not by itself strong enough to provide a completely restricted domain. Any analysis of this phenomena, then, which naively mapped the information in temporal adverbials into a Q-adverb's restriction and stopped at that would make the wrong predictions in the cases above. Few, however, would be so naive, since it has been widely observed that the domain of quantificational determiners can be restricted by contextual factors, and we would not expect quantificational adverbs to behave any differently, especially given the fact that they may appear without overt syntactic restriction in a variety of cases. One possible generalization, then, would be that the modifiers in (18) always **constrain** the restriction of the Q-adverb, thus allowing for the possibility of additional restriction by contextual information. A proposal more or less along these lines was made by Lewis (1975), Stump (1981, 1985), Farkas and Sugioaka (1983), Partee (1984), Farkas (1985), and Berman (1991).

However, these proposals cannot be correct, either. Johnston (1994), for example, notes that the utterances in (18) have more than one reading. In one possible reading, predicted to exist by the accounts above, the adjunct (partially) provides the restriction for the Q-adverb. This reading naturally arises when the examples in (18) are used to answer questions like those in (19).



(19) a. How does Marcia get home when it rains?

b. How does Marcia get home after it rains?

c. How does Marcia get home if it rains?

d. How does Marcia get home on Sundays?

The second reading, which is not accounted for by the proposals above, is one in which the head clause (again, partially) provides the restriction. This reading arises naturally when the utterances in (18) are used to answer the question in (20).<sup>7</sup>

(20) When does Marcia take the bus home?

On the basis of these examples, Johnston proposes that the utterances in (18) are actually structurally ambiguous, and that the readings above arise as a result of this ambiguity. That is, for Johnston, an example like (18a) can be associated with either structure in (21). In (21a), the when-clause is adjoined to IP while in (21b) the same clause is adjoined to VP.<sup>8</sup>

(21) a. [<sub>IP</sub> [<sub>IP</sub> Marcia always [<sub>VP</sub> takes the bus home]] [<sub>PP</sub> when it is raining]]

b. [<sub>IP</sub> Marcia always [<sub>VP</sub> [<sub>VP</sub> takes the bus home] [<sub>PP</sub> when it is raining]]]

The existence of the two readings are then explained by assuming the existence of a tripartite structure at LF, and adopting a form of Diesing's (1992) mapping hypothesis, given below in (22).

(22) **Determining the Restriction and Nuclear Scope of an Adverb of Quantification:**

- (i) Make the adverb of quantification the first element in the tripartite structure.
- (ii) Factor material from the VP in the scope of the adverb of quantification into the nuclear scope.
- (iii) Factor material adjoined to IP or in the Spec of IP into the restriction. (Johnston 1994:35)

Returning to our example, we can see that in (21a) the when-clause will be mapped (in accordance with the principle in (22)) into the restriction, giving us the reading where this clause restricts the domain of the Q-adverb. The structure in (21b), however, does not immediately give us the other reading, as Johnston would like. That is, in this structure **nothing** (except the moved subject *Marcia*) is either adjoined to or in the Spec of IP, and thus nothing is mapped into the restriction. But, as Johnston

<sup>7</sup>Johnston actually claims that adjunct clauses headed by the elements *if* and *whenever* have only the reading in which the adjunct provides the restriction. To my ear, however, both (18c) and *Marcia takes the bus home whenever it rains* seem like felicitous answers to (20) and thus have their restrictions constrained by the head clause.

<sup>8</sup>I am simplifying his structures somewhat, in that he adopts the VP-internal subject hypothesis, and thus posits movement of the subject into some VP-external position at surface structure. Nothing hinges on this, as far as I can tell.

notes, the Q-adverb in this utterance is not left unrestricted, so we must instead posit some mechanism by which the information in the head clause is copied into the restriction at LF. Johnston proposes that a process of variable binding, coupled with a general constraint against vacuous quantification can provide this mechanism, but the account seems otherwise unmotivated. In addition, it is not clear why it must be the **head** clause that is copied into the nuclear scope, and this predicts that the reading in which the adjunct restricts the quantifier domain should also be available for the structure in (21b). I would maintain that this spurious ambiguity is something to avoid. In any case, the tattered mapping hypothesis ends up looking like (23), and on this view the syntactic structure underspecifies the semantic structure.

(23) **Determining the Restriction and Nuclear Scope of an Adverb of Quantification:**

- (i) Make the adverb of quantification the first element in the tripartite structure.
- (ii) Factor material from the VP in the scope of the adverb of quantification into **either the restrictive clause** or the nuclear scope.
- (iii) Factor material adjoined to IP or in the Spec of IP into the restriction, (Johnston 1994:41)

So where does this discussion leave us? We have shown to be inadequate analyses which attempt to directly correlate the denotation of a particular adverbial adjunct with the restriction of Q-adverbs. On the one hand, we have seen cases where the restriction suggested by these clauses is incomplete, and, on the other hand, we have introduced cases where the relevant clause doesn't seem to correspond to the restriction at all. In addition, we have shown that a proposal by Johnston (1994), based on the work of Diesing, which provides a syntactic explanation for the facts above, leads to inelegant and otherwise unmotivated complications in the syntax-semantics interface. Even if Johnston's proposal were correct, it should be pointed out, his theory of domain restriction would still be incomplete in that he provides no explicit mechanism by which Q-adverbs that do not co-occur with explicit adverbial modifiers get their domain restriction, nor any mechanism by which contextual restrictions could arise. I would argue instead that the key to these examples lies with the question under discussion at the time at which the utterance is introduced. For those cases in which, for example, a *when*-clause appears to restrict the Q-adverb, it must be the case that it is being used in response to a question like (19). In cases where it does not, then the question under discussion must be like (20). In either case, it is **the question** that is proffering the relevant alternatives, not any explicit clause in the answer. So what I am claiming here is that temporal adverbial clauses are not restrictive clauses at all, but merely are used to indicate that a relevant set of situations has been proffered by an explicit or implicit question. This explains, in some sense, their optionality in that if the situations under discussion are sufficiently clear, then the use of such a clause would be unnecessary. We will return to this discussion in §4.

### 3.2 Association with Focus

Since Rooth (1985), and in later work by (among others) de Swart (1991) and Krifka (1992), the interaction between focus and adverbs of quantification has not gone

unrecognized. Consider the classic examples in (24) (originally from Rooth (1985). I believe) and the not-so-classic example in (25).

(24) a. In Saint Petersburg, officers always escorted [BALLERINAS]<sub>F</sub>.

b. In Saint Petersburg, [OFFICERS]<sub>F</sub> always escorted ballerinas.

(25) Marcia sometimes buys [Turkish COFFEE]<sub>F</sub>.

It is not hard to see that the utterances in (24a) and (24b) have different truth conditions. That is, the former is true if whenever officers escorted someone in Saint Petersburg, it was ballerinas they escorted. The latter, on the other hand, is true if whenever ballerinas were escorted by someone in Saint Petersburg, it was an officer who escorted them. The difference between the two cases, of course, is in the domain of situations which *always* ranges over.

Rooth (1985) deals with these examples in terms of a general theory of association with focus, a sketch of which might go something like this:<sup>9</sup> (i) take the sentence without the adverb, (ii) replace the focused constituent with an existentially quantified variable, (iii) map the result into the restrictive clause, (iv) map the original sentence into the nuclear scope (von Stechow 1995:16). As an example, consider the utterance in (25). In this case, the focused constituent is *Turkish coffee* so we replace that with an existentially quantified variable of the appropriate type. This will give us a set of situations in which Marcia buys something, and we take that to be the restriction of *sometimes*. If we put the focused constituent back and take the resulting proposition as the nuclear scope, we get close to the correct truth conditions. Namely, that some of the situations in which Marcia buys something are also situations in which she buys Turkish coffee.

As elegant and correct as this seems for the simple examples above, various counterexamples to this proposal have surfaced in the literature in recent years. Most of them are of the type in (26) (this one is like one from Partee (1991), and others have been independently proposed by Vallduví (1992) and Roberts (1991)).

(26) a. Jan always gives the award to the [GRADUATE STUDENTS]<sub>F</sub>.

b. No, PETER always gives the award to the graduate students, and MARCIA does too.

Now, Rooth (1985) predicts that (26a) should mean something like the following: in all those cases in which Jan gives the award to someone, it is the graduate students that she gives the award to. (26b) is predicted to mean that whenever someone gives the award to the graduate students, it is Peter, and this contradicted by the continuation. But (26b) is not internally contradictory, and should mean something like in all those cases in which Peter gives handouts to someone, it is the graduate students that he gives handouts to. This is a problem for Rooth (1985). That is, if prosodic prominence determines focus and focus determines the domain of *always*, we are left without an explanation for how the quantifier in (26b) can have the same domain as the one in (26a). On the other hand, note that this problem does not

<sup>9</sup>Kudos to von Stechow (1995) to boiling it down to these essentials. The interested reader will, of course, consult Rooth (1985) for the technical details, or Krifka (1992) for a more-refined version.

arise if we assume that it is not the prosodic focus, *per se*, that gives rise to the domain of *always*, but rather that it is the question under discussion that proffers the relevant set of alternatives in this case. The utterance in (26a), by virtue of its prosody, is presupposed to be congruent with a question whose Q-alternatives is a set of propositions where Jan always gives an award to someone. Then, as Roberts (1995) suggests in a parallel example involving *only*, in order to explain the relevance of the utterance of (26b) to the immediately preceding utterance, given its parallel form and contrasting prosodic focus, we can assume that the second speaker is offering a correction to the first. The alternatives under consideration, it seems, are not just cases in which Jan gives an award to someone, but rather cases in which someone gives an award to someone (otherwise, the interlocutors would not care about Peter). In his utterance, then, the second speaker attributes to Peter a property which the first speaker attributed to Jan. That property is that when he or she gives an award to someone, it is the graduate students that he/she gives it to.

It should be noted, however, that the problem with Rooth's theory is not limited to cases involving "corrective" focus. Any case in which a number of questions under discussion could in principle be being addressed will be problematic. For example, consider the exchange in (27).

(27) a. Who does Jan give her handouts to?

b. Jan always gives all of her handouts to the [GRADUATE STUDENTS]<sub>F</sub>.

An association with focus theory like that of Rooth, Krifka or de Swart will predict that the utterance in (27b) should mean something like the following: the situations in which Jan gives all of her handouts to someone are a subset of the situations where she gives all of her handouts to the graduate students. Now, imagine a situation where Jan has some handouts and decides to keep some for herself before distributing the rest to both the graduate students and the faculty. Such a situation, it seems, would be inconsistent with the utterance in (27b), yet the theory would predict the opposite. That is, this wouldn't be a situation where Jan distributes all of her handouts to someone (she has decided to keep some for herself), so it shouldn't have to also be a situation where she gives all of her handouts to the graduate students (leaving Jan free to distribute them to anyone in the department). Indeed, in this case, the association with focus theory seems to predict the wrong domain entirely. The correct truth conditions should be more like the following: in cases where Jan has handouts and gives them to someone, she gives all of them to the graduate students. Again, the key is the question under discussion. That is, if the question under discussion is the locus for the relevant alternatives, the intuitive domain of the Q-adverb in (27b) corresponds exactly to the alternatives proffered by the explicit question in (27a). Rooth's truth conditions, on the other hand, would be more appropriate as an answer to the question in (28).

(28) Who does Jan give all of her handouts to?

In this case, both the question and answer can refer to a situation in which Jan has, for example, three separate handouts and only gives the full of set of three to the graduate students. Note that Rooth's truth conditions do not rule out Jan giving the just two of the handouts to the faculty, and this seems correct given the situation

sketched above. The point to take from all this, of course, is that it is not the utterance itself (or the prosodic focus of the utterance itself) that determines the domain of the adverbs in these cases. Rather, it is the question to which the utterance is a response that is important, as I have been claiming all along.

### 3.3 Presuppositional Restriction

The effect of presupposition on quantificational structure has been noted several times, most prominently by Berman (1991), but also by Schubert & Pelletier (1989) and others. That is, in examples like (29), the presuppositions of the nuclear scope appear to partially define the cases being quantified over.

(29) a. A cat always lands on its feet.

b. Marcia usually takes the bus home when it rains.

In (29a), which appeared originally in Schubert & Pelletier, the proposition expressed is not that it is true in all cases that a cat lands on its feet (most of us take this utterance to be true, while we do not expect to be pelted by falling cats on the way to the office). Rather, the sentence means something like the following: in all cases where a cat is falling towards the ground, it lands on its feet. Similarly, in (29b), we have previously observed that the domain of *usually* is not the set of situations where it rains, the set of situations where it rains and where Marcia goes home. This "additional" domain restriction is readily explained by a principle such as Berman's (1991), which is given in (30).

(30) **Berman's Presupposition Hypothesis:**

The hypothesis is the following: in the logical representation of a quantified sentence (as analyzed in terms of restricted quantification), the presuppositions of the nuclear scope become part of the restrictive term. (Berman 1991:88–89)

That is, in the case of (29a), *land* lexically presupposes that its subject starts out falling through the air. This gives us something close to the restriction we want. In (29b), we can assume that taking the bus home entails an intent to go home, and this too gives us something like the correct domain in this case.

As Johnston (1994) notes, that such a principle would hold should not be surprising given the general nature of quantification. That is, he points out, a quantificational statement can be thought of as being about how many of those cases which meet the description in the restriction satisfy the test in the nuclear scope. The fact that the nuclear scope's presuppositions appear to constrain those cases in the restriction can be thought of as a means to ensure that no quantificational case fails to satisfy the test in the nuclear scope because of presupposition failure. If that was the case, it would not be "fair" to ask whether or not that case satisfied the nuclear scope.<sup>10</sup> This makes sense, but it suggests a more general requirement that the cases in the domain be "relevant to the discussion at hand" in order for the quantification to be considered fair. That is, when checking a certain case in the domain against the test

<sup>10</sup>The term "fair", presented in Johnston, is credited to Ladusaw (p.c.)

in the nuclear scope, we would not want to check cases that, for the purposes of the discussion at hand, were irrelevant. These will include cases that violate the presuppositions of the nuclear scope, but will also include situations that do not support any of the alternatives proffered by the question under discussion. For example, consider the utterance in (31).

(31) Jan usually butters her bread.

The truth conditions for this sentence are something like the following: in typical cases where Jan has bread and is going to eat it, she butters it. That is, we wouldn't want this sentence to be false if Jan didn't butter her bread before placing it in the refrigerator. And, while the first part of the above domain restriction can be attributed to a lexical presupposition associated with the possessive pronoun *her*, there is nothing about the nuclear scope that presupposes that Jan is about to eat her bread.<sup>11</sup> Jan could, in principle, be buttering bread as part of a bake-off, or buttering bread to give to someone else to eat. That Jan is about to eat her bread is an **implicature**, but it still finds its way into the nuclear scope. Why? Because, out of the blue, the most easily imagined situation under discussion which is compatible with Jan buttering her bread is one in which she is about to eat it herself. It is quite easy to defeat this implicature and in this case the component of the restriction that requires that Jan be about to eat her bread is also defeated. The example in (32) illustrates.

(32) Jan usually butters her bread before feeding it to the pigeons in Golden Gate Park.

In any case, we take Berman's arguments in favor of the presuppositions of the nuclear scope constraining the set of situations in the restrictive clause to be useful and basically correct. We note, however, that this hypothesis is incomplete and would in addition reject that any explicit copying of this information be done at the level of logical form. It will be argued that the effect described by Berman follows naturally from the pragmatic view of domain restriction sketched in §4, and that such an account is ultimately more complete. That is, the effects described in this section will follow naturally from our theory of presupposition in general, and the theory will extend to the problematic cases reviewed above.

## 4 A Pragmatic Account

In this section, I introduce a theory of adverbs of quantification that treats these elements as generalized quantifiers, but rejects the notion that their restriction is made explicit in logical form and computed by grammatical processes. Instead, I will claim that Q-adverbs range freely over a set of relevant situations, and that a conspiracy of pragmatic processes determines what this set of situations will be.

### 4.1 A Situation Semantics for Adverbial Quantification

We begin by adopting Kratzer's (1989) version of situation semantics, which can be taken to involve (at least) the following ingredients.

<sup>11</sup>I am grateful to Christian Innerhoffer (p.c.) for making this clear to me.

$S$	the set of possible situations
$A$	the set of possible individuals
$\leq \subseteq S \times S$	the 'part-of' relation
$\wp(S)$	the power set of $S$ , the set of propositions
$W \subseteq S$	the set of possible worlds

As may or may not be evident from the above, possible situations and possible individuals are the primitives, and situations themselves stand in a 'part-of' relation. That is, it is possible for one situation to contain another. The set of worlds are taken to be the maximal elements in  $S$  with respect to the 'part-of' relation, and propositions are taken to be persistent sets of situations. That is, if a proposition contains some situation  $s$  which supports it, it must contain all the supersituations of that situation, up to and including the world  $w_s$  that  $s$  is a part of.

The idea, then, that we've been assuming throughout the paper but now want to make explicit is that adverbs of quantification relate sets of situations, just as determiners relate sets of individuals. So, for example, the meaning of a sentence like *The heat is always on when it is cold* can be intuitively stated as the following: the situations which support the proposition *is cold* (at some time  $t$ ) also support the proposition *the heat is on* (at some time  $t$ ).<sup>12</sup> Ranging over situations in this way, however, presents a problem in light of the fact that any situation may contain or be contained by another. We risk counting things more than once, as the following example involving a frequency adverb illustrates.<sup>13</sup>

(33) John climbed Mt. Holyoke twice.

Now, suppose we want to count the situations in which John climbed Mt. Holyoke. As von Fintel points out, even if John climbed Mt. Holyoke once, it will be the case that many situations will exist in which John climbed Mt. Holyoke. For example, there is a situation that includes John climbing Mt. Holyoke and nothing else, and a situation that includes John climbing Mt. Holyoke and his celebratory dinner afterwards, and so on. The catch is that the first situation is really part of the second, so both shouldn't be counted separately. What others have proposed to do in this case is to count the minimal situations that support the fact that John climbed Mt. Holyoke, i.e., situations that have no proper parts that also support this fact. Given a set  $S$  of situations, we can define the minimal situations in  $S$  as in (34).

(34) Minimality (Berman 1987, Heim 1991):

$$\min(S) = \{ s \in S \mid \forall s' \in S, s' \leq s \Rightarrow s' = s \}$$

The function  $\min(S)$  gives us the set of situations in  $S$  that do not have proper parts that are also in the set. In the case of a proposition, the set of minimal situations that support it are those situations which contain just enough parts to support the proposition, but no "extra" parts.<sup>14</sup>

<sup>12</sup>We'll be playing fast and loose with the notion of time throughout.

<sup>13</sup>This example is due to von Fintel (1995).

<sup>14</sup>von Fintel (1995) provides an interesting discussion of the problems that this view of minimality presents with respect to propositions involving stative or atelic predicates. Like von Fintel, I will leave the problem of individuating situations correctly in these cases to further research.

So, with this technical problem out of the way, we are now in a position to provide a semantics for Q-adverbs. To facilitate the discussion, we introduce the example in (35a), which we take to have the logical form in (35b). As before, the capital letters in this example indicate intonational focus, while the functionally focused constituent is marked with subscript *F*.

(35) a. Jan always buys [Turkish COFFEE]<sub>F</sub>

b. always(Jan buys Turkish coffee)

Now, I would like to claim that this sentence is interpreted in accordance with the rule in (36), a rule which at first may seem surprising in that no reference to an explicit restriction is made.

(36) Interpretation of [always  $\phi$ ]:

Let  $R \subseteq S \times S$  such that:

$\forall s, s' \in S, \langle s, s' \rangle \in R \Leftrightarrow s' \in \min(f(s))$ , then:

$s \in [\text{always } \phi]$  iff  $\forall s'$  such that  $\langle s, s' \rangle \in R$ ,  $\exists s''$  such that  $s' \leq s''$  and  $s'' \in [\phi]$ .

A few observations, it seems, are in order at this time. First, observe that the rule above is reminiscent of many rules that have been proposed for modals. That is, I claim here that the interpretation of a Q-adverb is dependent on a function *f*, which looks a bit like a function that Kratzer (1981) called the **modal base**. The intuitive idea is the same: we want *f* to return contextual information that is somehow relevant to the interlocutors in a discourse. It differs from Kratzer's, however, in that hers is a function from situations to sets of propositions, i.e., to something like a **local common ground** whereas I take it to be a function from situations to a set of situations, more akin to a **context set**. Of course, one could recover the local context set from the Kratzerian modal base simply by taking its intersection. My choice is motivated purely by technical/presentational reasons, as should become evident shortly.

Q-adverbs, it is claimed, range over the minimal situations in the local context set. Returning to our example, suppose our local context set consisted just of those minimal situations in which Jan was buying something.<sup>15</sup> Intuitively, what *always* seems to require is that all these situations are also situations in which Jan bought Turkish coffee. This, however, cannot be totally correct. That is, recall that the situations we are ranging over are minimal situations, the smallest situations that satisfy the conjunction of propositions in the contextually-given restriction. These situations, however, since they are minimal, may not be large enough to satisfy the proposition expressed by the nuclear scope. What the rule in (36) requires, then, is that each minimal situation in the restriction be part of (i.e., be extendable to) a situation that satisfies the nuclear scope. In our example, then, we are requiring that each of the minimal situations in which Jan is buying something can be extended to a situation in which she is buying Turkish coffee. This seems correct.

<sup>15</sup>The process by which this can be determined will be the focus of the remainder of this paper.



A huge question, however, remains. How was it that  $f(s)$  picked out just those situations in which Jan was buying something? It is one thing to say that the denotation of  $f$  is contextually determined. It is the burden, however, of a purely pragmatic account to be explicit about how this contextual determination works, and that is the subject of the remaining sections of the paper.

## 4.2 Contextual Domain Restriction

Throughout the paper, we have argued that a wide variety of contextual information is employed to restrict the domain of Q-adverbs, including most notably presuppositional information and alternatives proffered by the question under discussion. And, in the formal account of the previous subsection, we have posited a function  $f$  not unlike Kratzer's modal base which provides a formal "hook" to this contextual information by making available a local context set, which we have suggested is the set of situations over which Q-adverbs range. The time has come now to link these two ideas together by providing an account of how the local context set is determined in terms of our previous observations about presupposition and congruence.

So consider again the example from the previous subsection, repeated here in (37), and recall that we decided that its domain should be something like the set of all minimal situations in which Jan buys something. This, of course, is the domain predicted by an attraction with focus theory, and we would want our results to be consistent with that body of work.

(37) Jan always buys [Turkish COFFEE]<sub>F</sub>

In considering this example, we observe first that this utterance is a felicitous response to the question in (38). That is, one possible context in which this (37) could be uttered is in a context where the question under discussion is (38).<sup>16</sup>

(38) What does Jan buy?

Now, recalling our discussion from §2, the Q-alternatives associated with this question is the set of all propositions where it is true that Jan buys something. The union of this set of propositions, in turn, will return a single proposition which supports situations like one in which Jan buys Indian coffee, one in which she buys Turkish coffee and so forth. It will not, however, include situations in which Jan doesn't buy anything. The minimal situations in this resulting set are those situations just large enough to support that Jan buys these various types of coffee while supporting nothing else. It is these situations that we want to quantify over. As a first stab, then, at what  $f$  should look like, it seems that at very least we would like it to pick out the union of the Q-alternatives of the question under discussion. A constraint like the one in (39) does the trick.

<sup>16</sup>It could also answer the question *What does Jan always buy?*, which for the purposes of this discussion, we will take to be more or less equivalent to (38). It may be the case that in a question like (38), an implicit Q-adverb (something like *typically*) is present. In any case, I would like to suggest that in computing the focal alternatives for utterances like (37) and the Q-alternatives for questions, it is possible to "raise" the Q-adverb out of its surface position and thus remove it from consideration when the alternatives are computed. There is probably a more sophisticated way to look at this.

(39) For any utterance  $\phi$  with question under discussion  $\alpha$ :

$$\forall s \in S, f(s) = \cup QA(\alpha)$$

But why should this be? Well, recall that the Q-alternatives corresponding to a given question can be taken to encode the set of propositions under consideration. Indeed, it is the set of Q-alternatives that are being "asked" in any situation that supports the acceptance of the question. And, if by being asked, we mean that their truth is being evaluated, it is not unreasonable to expect that interlocutors would consider the situations which support the answer to the question as part of a hypothetical context set so that they could be evaluated with respect to other information that they believe to be true. Since  $f$  gives us this sort of hypothetical context set, it is not unreasonable to expect that the situations proffered by the Q-alternatives would be made available by it. Looking at it another way, taking the union of the Q-alternatives to be a part of a local context set can be thought of as a consequence of accepting the **presuppositional content** of a question into the common ground. Carlson (1983), in fact, claimed that the presuppositional content of a question was in fact the **disjunction** of its possible answers (plus the admissibility of its parts). Intuitively, I think, this is intended to capture the idea that the possible answers to a question must be felicitous with respect to the current context. That is, it should not be possible to ask felicitously ask a question whose only possible answers conflict with information already presupposed.

Indeed, as much compatible information as possible from the **global** common ground should be present in the hypothetical context set up by  $f$ , since the interlocutors would not want to evaluate these alternatives in a vacuum, but rather against all information that they believe to be true. An argument related to this was made by Roberts (1995b), who argued that all hypothetical contexts are assumed by interlocutors to be optimally realistic for reasons similar to those suggested above. That is, she argued the following:

"(The hypothesis above) is motivated by the need to assure that all the interlocutors' assumptions are as similar as possible, whether these are assumptions about the actual world – for which the common ground defines the candidate set – or about hypothetical or counterfactual contexts under discussion. Those aspects of hypothetical or counterfactual contexts which aren't spelled out by the speaker are assumed to be identical with what we know about actuality, as reflected in the common ground, at least insofar as this doesn't lead to contradictions with what's explicitly spelled out. This enables us to avoid misunderstanding, while minimizing the need for detailed (and often redundant) description of hypothetical contexts. (Roberts 1995b:22)"

We can capture this idea formally by altering the constraint in (39) along the lines in (40). Here, we simply require that the situations returned by  $f$  also be situations that satisfied all the propositions in the common ground at the time of the utterance.<sup>17</sup>

(40) For any utterance  $\phi$  with question under discussion  $\alpha$ :

<sup>17</sup>We follow Roberts (1995) and take CG to be a function from moves (utterances) to the set of propositions in the common ground.

$$\forall s \in S, f(s) = (\cap CG(\phi)) \cap (\cup QA(\alpha))$$

Returning to our simple example, then, a derivation of the relevant restriction would proceed as in (41), with  $f(s)$  being set to all the situations which support answers to *What did Jan buy?* for some arbitrary  $s \in S$ .

$$(41) f(s) = \{ s \mid (\exists u \in D) \text{Jan buys } u \text{ is true in } s \} \cap \{ s \mid s \in \cap CG(\phi) \}$$

$\min(f(s))$  = the minimal situations in the set above.

And the proposition in (38) will be true if all those situations on the last line can be extended into situations where Jan buys Turkish coffee, which is what we want. Taken another way, we can take the utterance as choosing choosing from the context set only those buying situations which can be extended to situations where Jan buys Turkish coffee.

The account above also gives a satisfactory result for cases involving what has been argued to be explicit restrictive clauses. Recall, for example, the sentences in (18), one of which is repeated here in (42).

(42) Marcia always takes the bus home when it rains.

Now, depending on the focal structure of the utterance, this utterance can felicitously answer either question in (43), as well as a host of more general questions.

(43) a. How does Marcia get home when it rains?

b. When does Marcia take the bus home?

Each of these questions, of course, is associated with a distinct set of alternatives. In the case of (43a) this will be the set in (44a). In the case of (43b), it will be the set in (44b).

(44) a.  $\{ p \mid (\exists R \in D)[p = \text{Marcia } R \text{ home when it rains}] \}$

b.  $\{ p \mid (\exists q \in D)[p = \text{Marcia takes the bus home } q] \}$

Setting the union of each of these equal to  $f(s)$  will give us the following results: in the case of (43a), we predict that the utterance is true iff all the minimal situations in which Marcia does something to get home when it rains can be extended into situations where she takes the bus home when it rains; in the case of (43b), we predict that the utterance is true iff all the minimal situations in which Marcia takes the bus home when can be extended to situations where Marcia takes the bus home when it rains. That is, we seem to get the two readings observed by Johnston (1994), one of which corresponds to the case in which the *when*-clause provides the restriction, while the other corresponds to Johnston's head-restriction reading. I think these are both correct results, although it seems a little odd to include something like a *when*-clause in both the restriction and the nuclear scope. Q-adverbs, however, are conservative, so this does not affect the interpretation adversely.

There is, however, some subtlety in the data, that is not immediately predicted by our account. The examples in (45) were presented in Johnston (1994) and indeed were taken to motivate his claims about the Mapping Hypothesis.

(45) a. Marcia always takes the bus home when it rains.

- b. When it rains, Marcia always takes the bus home.

Johnston observed, correctly I think, that while the example in (45a) has two readings available for it (the two we have been discussing thus far), the example in (45b) does not. That is, in our terms, (45b) cannot answer the question in (42b). And, since our notion of congruence is essentially semantic, we have no way (on the surface) to explain why this might be the case.

The answer, I suspect, has to do with the nature of topicalization, and more specifically, what role left-dislocated elements play with respect to information structure. Indeed, Vallduví (1992) and others have suggested that left-dislocated elements correspond to old information, or are crucially presupposed. As a felicitous response to (42b), however, we would expect that the *when*-clause be in focus, or new. Clearly, a better explanation is needed, but I believe that the observations here suggest a step in the right direction.

As a final illustrative example, recall the example in (31), repeated here in (45) and fixed up with explicit focus marking.

- (46) Jan always [butters her BREAD]<sub>F</sub>.

This, of course, is congruent with a question whose Q-alternatives correspond to a set of propositions in which Jan does something, but this does not seem to be enough to derive the correct restriction. That is, if we set  $f(s)$  to the Q-alternatives and stop there, we predict that this sentence should mean that all minimal situations in which Jan does something should be extendable into situations where Jan butters her bread. This is clearly too strong.

All is not lost, however, if we remember what  $f(s)$  returns – namely, a hypothetical context which is as much like the actual context as possible with respect to the information in the common ground. And, if an utterance like (46) is accepted by the interlocutors, the (global) context set will entail all of this utterance's presuppositions, one of which is the presupposition that Jan has bread (associated with the possessive *her*). Now, if the hypothetical context set is as much like the real context set as possible, it too will entail that Jan has bread, i.e., all the situations in the hypothetical context set will be situations in which Jan has bread. Our resulting domain, then, will be the set of minimal situations in which Jan is doing something and in which Jan has bread. We can plausibly argue further that an implicature associated with the word *butter* (i.e., that you are about to eat what you butter) further restricts the domain, giving us more or less the set of situations we want: the minimal situations in which Jan is doing something, has bread, and is about to eat it. These all should be extendable into situations in which Jan butters her bread, for the utterance to be true.

## 5 Conclusions and Issues for Further Study

I have provided a situation-based theory of Q-adverbs in which their domain is computed pragmatically, without reference to an implicit tripartite representation or any grammatical operation. In addition to being more attractive from a conceptual standpoint, such a theory stands to better account for cases discussed above in which contextual information plays a indispensable role in determining the domain of these

operators. In future work, I would like to better examine cases in Johnston (1994) and Diesing (1990, 1992) that have been taken to motivate an implicit tripartite structure, and to better compare the theory sketched here to other pragmatic theories of this phenomena, such as that of Schwarzschild (1994), Rooth (1992) and von Fintel (1995).

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